

## **SYSTEMS AND METHODS FOR IMAGE PATTERN RECOGNITION**

### **Abstract**

[80] Systems and methods for image pattern recognition comprise digital image capture and encoding using vector quantization (“VQ”) of the image. A vocabulary of vectors is built by segmenting images into kernels and creating vectors corresponding to each kernel. Images are encoded by creating a vector index file having indices that point to the vectors stored in the vocabulary. The vector index file can be used to reconstruct an image by looking up vectors stored in the vocabulary. Pattern recognition of candidate regions of images can be accomplished by correlating image vectors to a pre-trained vocabulary of vector sets comprising vectors that correlate with particular image characteristics. In virtual microscopy, the systems and methods are suitable for rare-event finding, such as detection of micrometastasis clusters, tissue identification, such as locating regions of analysis for immunohistochemical assays, and rapid screening of tissue samples, such as histology sections arranged as tissue microarrays (TMAs).